

REMARKS

In the Office Action the Examiner noted that claims 1-31 were pending in the application and the Examiner rejected all claims. By this Amendment, various claims have been amended in an effort to clarify the features of the invention. The Examiner's rejections are traversed below.

The Rejection

In item 5 on pages 2-10 of the Office Action, the Examiner has maintained the rejection of all claims under 35 U.S.C. §103 as unpatentable over U.S. Patent 5,933,599 to Nolan in view of U.S. Patent 5,905,863 to Knowles et al., and further in view of U.S. Patent 5,835,084 to Bailey.

In item 7 starting on page 10 of the Office Action, the Examiner has responded to the applicants' prior arguments. Therefore, the applicants focus below on the points raised by the Examiner in item 7 on pages 10-12 of the Office Action.

Claim 1

Claim 1 is directed to a document display apparatus in which a document group keyword extraction device extracts keywords contained in a body of a document forming part of each group of documents by referring to the document group information. A document group keyword display device displays a title of each document in each group of documents and the keywords extracted from the body of the document corresponding to the title by the document group keyword extraction device. The title and the keywords are displayed in areas related to each other.

On page 10 of the Office Action the Examiner takes the position that "Nolan teaches the extraction and display of keywords contained in e-mail documents", referring to column 2, lines 30-67 and Figures 9 and 10.

Applicants have reviewed the portions of Nolan relied on by the Examiner and do not find support for the Examiner's position. In particular, as illustrated in Figure 10, Nolan displays a subject, an author, a size and a date of an e-mail message. Nolan does not provide any teaching in relation to extracting keywords from a body of an e-mail message. The Examiner appears to be taking the position that the subject and the author name constitute keywords.

However, these features are information pieces which are contained in a header portion of an e-mail message and represent attributes of the e-mail message. Thus, such information pieces do not constitute keywords in the body of an e-mail message. It is submitted that those of skill in the art would readily appreciate the distinctive nature of the attribute information from the body part of the e-mail message. Thus, it is submitted that "keywords" which are extracted from the body of the e-mail message are clearly distinct from information pieces such as the subject and the author's name. The above distinction is illustrated in Figure 5 of the subject application in which the structure of meta-indexed data is presented. It is structured to provide separate columns for entering titles, author names, message line numbers, dates, etc. In addition, there is a separate column for entering keywords. According to the subject application, as demonstrated, for example, in Figure 25, keywords are displayed in a manner associated with the corresponding document title but in a separate column from the title. This manner of displaying these two different types of information supports the distinction which exists between titles and keywords.

In summary, it is submitted that the prior art does not teach or suggest:

"a document group keyword extraction device to extract keywords contained in a body of a document forming part of each group of documents by referring to the document group information; and

a document group keyword display device to display a title of each document in each group of documents and the keywords extracted from the body of the document corresponding to the title by said document group keyword extraction device, the title and the keywords being displayed in areas related to each other."

Therefore, it is submitted that claim 1 patentably distinguishes over the prior art.

Claim 2

Claim 2 depends from claim 1 and includes all of the feature of that claims plus additional features which are not taught or suggested by the prior art. Therefore, it is submitted that claim 2 patentably distinguishes over the prior art.

Claim 3

Claim 3 is directed to an apparatus in which a document attribute analysis device extracts document attribute information about an attribute of each document from a plurality of documents forming a set of documents. A document group structure display device displays cross references in each group of documents in a tree structure in which at least one of the document attribute information and abbreviated information forming part of the group of documents is displayed at a corresponding node.

On page 11 of the Office Action the Examiner takes the position that "Knowles teaches the identification or determination which document is a reference to another message by extracting attribute information such as the subject, quoted material, etc." (Relying on column 4, line 8 to column 5, line 13.)

While Knowles does teach investigating the subject, quoted material, etc., it is submitted that neither Knowles nor any of the other cited prior art teaches or suggests displaying the extracted attribute information at nodes of a tree structure presentation. Thus, the present invention includes features relating to the manner of display in which the attribute information including an author name, the number of lines, etc., connected to a message, are displayed in a compact format in a relevant node in a tree structure presenting a document thread from assisting a user to quickly find out if a message is likely to be useful to him. This feature is not taught or suggested by the prior art.

In summary, it is submitted that the prior art does not teach or suggest:

"a document attribute analysis device to extract document attribute information about an attribute of each document from a plurality of documents forming the set of documents; and

a document group structure display device to display cross-references in each group of documents in a tree structure in which at least one of the document attribute information and abbreviated information for each document forming part of the group of documents is displayed at a corresponding node."

Therefore, it is submitted that claim 3 patentably distinguishes over the prior art.

Claims 4-7

Claims 4-7 depend, directly or indirectly from claim 3 and include all of the features of that claim plus additional features which are not taught or suggested by the prior art. Therefore, it is submitted that claims 4-7 also patentably distinguish over the prior art.

Claim 8

Claim 8 is directed to an apparatus in which a group of documents, once assembled together by a document group analysis device, based on a referencing relationship, are further classified by a topic analysis device based on topics extracted from each document. A topic keyword extraction device extracts keywords contained in the body of each document relevant to each topic obtained by the further classification, and a topic key word display device displays a title of each document relevant to each topic obtained by the further classification and the keywords extracted from the body of each document corresponding to each title. The title and the keywords are displayed in areas related to each other.

It is submitted that the above features are not taught or suggested by any of the cited documents. On page 11 of the Office Action the Examiner states that "Nolan discloses the extraction of information as document group information - group of e-mail messages" (relying on column 2, lines 30-67 in Figures 9 and 10). However, this clearly does not correspond to the above-described features of the present invention. In summary, it is submitted that the prior art does not teach or suggest:

"a document group analysis device to classify a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced, and for extracting information about classification as document group information;

a topic analysis device to further classify each group of cross-referenced documents based on topics extracted from each document forming part of each group of cross-referenced documents, and to extract information about further classification as topic classification information;

a topic keyword extraction device to extract keywords contained in a body of each document relevant to each topic obtained by the further classification of each of the groups of documents by referring to the document group information and the topic classification information; and

a topic keyword display device to display a title of each document relevant to each topic obtained by the further classification and the keywords extracted from the body of each document corresponding to each title by said topic keyword extraction device, the title and the keywords being displayed in areas related to each other."

Therefore, it is submitted that claim 8 patentably distinguishes over the prior art.

Claim 9

Referring to claim 9, it is submitted that the prior art does not teach or suggest:

"extracting keywords contained in a body of a document forming part of each group of documents by referring to the document group information; and

displaying a title of each document in each group of documents and the keywords extracted from the body of the document corresponding to the title, the title and the keywords being displayed in areas related to each other."

Therefore, it is submitted that claim 9 patentably distinguishes over the prior art.

Claim 10

Claim 10 depends from claim 9 and includes all of the features of that claim plus additional features which are not taught or suggested by the prior art. Therefore, it is submitted that claim 10 patentably distinguishes over the prior art.

Claim 11

It is submitted that the prior art does not teach or suggest the method of claim 11 which includes:

“classifying a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced;

extracting information about classification as document group information;

extracting document attribute information about an attribute of each document from a plurality of documents forming the set of documents; and

displaying cross-references in each group of documents in a tree structure in which the document attribute information or abbreviated information for each document forming part of the group of documents is displayed at each node by referring to the document group information and the document attribute information.”

Therefore, it is submitted that claim 11 patentably distinguishes over the prior art.

Claims 12-15

Claims 12-15 depend, directly or indirectly, from claim 11 and include all of the features of that claim plus additional features which are not taught or suggested by the prior art.

Therefore, it is submitted that claims 12-15 patentably distinguish over the prior art.

Claims 16

Referring to claim 16, it is submitted that the prior art does not teach or suggest the claimed method which includes:

“extracting keywords contained in a body of each document relevant to each topic obtained by the further classification of each group of cross-referenced documents by referring to the document group information and the topic classification information; and

displaying a title of each document relevant to each topic obtained by the further classification and the keywords extracted from the body of each document corresponding to each title, the title and the keywords being displayed in areas related to each other.”

Therefore, it is submitted that claims 16 patentably distinguishes over the prior art.

Claim 17

Referring to claim 17, it is submitted that the prior art does not teach or suggest the claimed storage medium of claim 17 which includes:

“extracting keywords contained in a body of a document forming part of each group of documents by referring to the document group information; and

displaying a title relevant to each group of documents and the corresponding keywords extracted from the bodies of the group of documents.”

Therefore, it is submitted that claim 17 patentably distinguishes over the prior art.

Claim 18

Referring to claim 18, it is submitted that the prior art does not teach or suggest:

“classifying a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced;

extracting information about classification as document group

information;

extracting document attribute information about an attribute of each document from a plurality of documents forming the set of documents; and

displaying cross-references in each group of documents in a tree structure in which the document attribute information or abbreviated information for each document forming part of the group of documents is displayed at a corresponding node by referring to the document group information and the document attribute information.”

Therefore, it is submitted that claim 18 patentably distinguishes over the prior art.

Claim 19

Claim 19 is directed to a document display apparatus in which a contents estimation device estimates topic patterns of cross-referenced message documents stored in a document database based on the contents of the documents, information pertaining to the documents, and cross references among the documents. Plural types of display indexes corresponding to topic patterns are generated and the topic pattern indicates the manner in which the message details shift from one message to another. A view generation device generates plural types of views for displaying a retrieval result from a retrieval engine device using display indexes, to switch the views, and to display the views on the display device.

On pages 11 and 12 of the Office Action the Examiner takes the position that “Knowles teaches the determination or estimation of various linguistic clues - topic patterns - to determine whether a message is a reply to another message.” (Relying on column 4, lines 25-67.)

In the case of the claimed invention of claim 19, a topic pattern is recited as “indicating a manner in which message details shift from one message to another.” It is submitted that this does not correspond to the “linguistic clues” referred to by the Examiner. In addition, the Examiner’s comments fail to address the feature of generating plural types of display indexes corresponding to the topic patterns and the feature of generating plural types of views for displaying the retrieval result using the display indexes, to switch the views, and to display the

views on the display device.

In summary, it is submitted that none of the prior art teaches or suggest:

“a contents estimation device to estimate topic patterns of the cross-referenced message documents stored in a document database based on contents of the documents, information pertaining to the documents, and cross-references among the documents, and to generate plural types of display indexes corresponding to the topic patterns, the topic pattern indicating a manner in which message details shift from one message to another;

...a view generation device to generate plural types of views for displaying the retrieval result from said retrieval engine device using the display indexes, to switch the views, and to display the views on the display device.”

Therefore, it is submitted that claim 19 patentably distinguishes over the prior art.

Claims 20-29

Claims 20-29 depend, from claim 19 and include all of the features of that claim plus additional features which are not taught or suggested by the prior art. Therefore, it is submitted, that claims 20-29 patentably distinguish over the prior art.

Claim 30

Referring to the method of claim 30, it is submitted that the prior art does not teach or suggest:

“estimating topic patterns of the cross-referenced message documents stored in a document database based on contents of the documents, information pertaining to the documents, and cross-references among the documents;

generating plural types of display indexes corresponding to the

topic patterns;

inputting a retrieval request corresponding to the document
database from a user;

retrieving a document in the document database to produce a
retrieval result;

generating plural types of views for displaying the retrieval result
using the display indexes;

switching the views ; and

displaying the views on a display device.”

Therefore, it is submitted that claim 30 patentably distinguishes over the prior art.

Claim 31

Referring to claim 31, it is submitted that the prior art does not teach or suggest:

“estimating topic patterns of the cross-referenced message
documents stored in a document database based on contents of
the documents, information pertaining to the documents, and
cross-references among the documents;

generating plural types of display indexes corresponding to the
topic patterns;

inputting a retrieval request corresponding to the document
database from a user;

retrieving a document in the document database to produce a

retrieval result;

generating plural types of views for displaying the retrieval result
using the display indexes;
switching the views ; and
displaying the views on a display device.”

Therefore it is submitted that claim 31 patentably distinguishes over the prior art.

Finality of the Office Action

It is submitted that the amendments being submitted herewith merely amplify the features of the invention which have already been addressed during prosecution. Therefore, it is respectfully requested that these amendments be entered in this case.

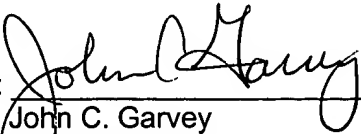
Summary

It is submitted that none of the references, either taken alone or in combination, teach the present claimed invention. Thus, claims 1-31 are deemed to be in a condition suitable for allowance. reconsideration of the claims and early notice of allowance are earnestly solicited.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 11-27-02

By: 
John C. Garvey
Registration No. 28,607

700 Eleventh Street, NW, Suite 500
Washington, D.C. 20001
(202) 434-1500

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please AMEND the following claims:

1. (THREE TIMES AMENDED) A relevant document display apparatus for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network, the cross-referenced message documents having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said apparatus comprising:

a document group analysis device to classify a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced, and for extracting information about classification as document group information;

a document group keyword extraction device to extract [a keyword] keywords contained in a body of a document forming part of each group of documents by referring to the document group information; and

a document group keyword display device to display a title of each document in each group of documents and the keywords extracted from the body of the document corresponding to the title by said document group keyword extraction device, the title and the keywords being displayed in areas related to each other.

2. (AS ONCE AMENDED) The apparatus according to claim 1, wherein said document group keyword display device displays with enhancement a group of documents containing a document specified by a user for retrieval, or a keyword specified for retrieval.

3. (AS TWICE AMENDED) A relevant document display apparatus for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network, the cross-referenced message documents having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said apparatus comprising:

a document group analysis device to classify a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced, and for extracting information about classification as document group information;

a document attribute analysis device to extract document attribute information about an attribute of each document from a plurality of documents forming the set of documents; and

a document group structure display device to display cross-references in each group of documents in a tree structure in which at least one of the document attribute information and abbreviated information for each document forming part of the group of documents is displayed at a corresponding node.

4. (AS UNAMENDED) The apparatus according to claim 3, wherein
said document group structure display device displays the cross-references in each group of documents in a tree structure in which a combination of an abbreviated name of an author and amount-of-document information for each document forming part of the group of documents is displayed as each node by referring to the document group information and the document attribute information.

5. (AS UNAMENDED) The apparatus according to claim 3, wherein
said document group structure display device further displays a plurality of topics extracted from a document contained in each group of documents as associated with each node forming part of the tree structure displayed for the group of documents.

6. (AS UNAMENDED) The apparatus according to claim 5, wherein
said document group structure display device displays each topic and a relevant node in a same color for each group of documents.

7. (AS UNAMENDED) The apparatus according to claim 3, wherein
said document group structure display device displays with enhancement a node corresponding to a document specified by a user for retrieval.

8. (THREE TIMES AMENDED) A relevant document display apparatus for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network, the cross-

referenced message documents having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said apparatus comprising:

a document group analysis device to classify a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced, and for extracting information about classification as document group information;

a topic analysis device to further classify each group of cross-referenced documents based on topics extracted from each document forming part of each group of cross-referenced documents, and to extract information about further classification as topic classification information;

a topic keyword extraction device to extract keywords contained in a body of each document relevant to each topic obtained by the further classification of each of the groups of documents by referring to the document group information and the topic classification information; and

a topic keyword display device to display a title of each document relevant to each topic obtained by the further classification and the keywords extracted from the body of each document corresponding to each title by said topic keyword extraction device, the title and the keywords being displayed in areas related to each other.

9. (THREE TIMES AMENDED) A relevant document display method for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network and having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said method comprising:

classifying a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced;

extracting information about classification as document group information;

extracting [a keyword] keywords contained in a body of a document forming part of each group of documents by referring to the document group information; and

displaying a title of each document in each group of documents and the keywords extracted from the body of the document corresponding to the title, the title and the keywords being displayed in areas related to each other.

10. (AS ONCE AMENDED) The method according to claim 9, further comprising displaying with enhancement a group of documents containing a document specified by a user for retrieval, or a keyword specified for retrieval.

11. (THREE TIMES AMENDED) A relevant document display method for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network and having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said method comprising:

classifying a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced;

extracting information about classification as document group information;

extracting document attribute information about an attribute of each document from a plurality of documents forming the set of documents; and

displaying cross-references in each group of documents in a tree structure in which the document attribute information or abbreviated information for each document forming part of the group of documents is displayed [as] at each node by referring to the document group information and the document attribute information.

12. (AS ONCE AMENDED) The method according to claim 11, further comprising displaying the cross-references in each group of documents in a tree structure in which a combination of an abbreviated name of an author and amount-of-document information for each document forming part of the group of documents is displayed as each node by referring to the document group information and the document attribute information.

13. (AS ONCE AMENDED) The method according to claim 11, further comprising displaying a plurality of topics extracted from a document contained in each group of documents as associated with each node forming part of the tree structure displayed for the group of documents.

14. (AS ONCE AMENDED) The method according to claim 13, further comprising displaying each topic and the relevant node in a same color for each group of documents.

15. (AS ONCE AMENDED) The method according to claim 11, further comprising displaying with enhancement a node corresponding to a document specified by a user for retrieval.

16. (THREE TIMES AMENDED) A relevant document display method for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network and having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said method comprising:

classifying a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced;

extracting information about classification as document group information;

further classifying each of the classified group of documents based on topics extracted from each document forming part of each group of documents, and extracting information about further classification as topic classification information;

extracting keywords contained in a body of each document relevant to each topic obtained by the further classification of each group of cross-referenced documents by referring to the document group information and the topic classification information; and

displaying a title of each document relevant to each topic obtained by the further classification and the keywords extracted from the body of each document corresponding to each title, the title and the keywords being displayed in areas related to each other.

17. (THREE TIMES AMENDED) A computer-readable storage medium storing instructions to direct a computer to perform a method for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network and having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said method comprising:

classifying a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced;

extracting information about classification as document group information;

extracting [a keyword] keywords contained in a body of a document forming part of each group of documents by referring to the document group information; and
displaying a title relevant to each group of documents and [a] the corresponding [keyword] keywords extracted from the bodies of the group of documents.

18. (AS TWICE AMENDED) A computer-readable storage medium storing instructions to direct a computer to perform a method for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network and having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said method comprising:

classifying a plurality of documents forming a set of documents into at least one group of cross-referenced documents by determining for each document in the set, which of the documents is referenced;

extracting information about classification as document group information;

extracting document attribute information about an attribute of each document from a plurality of documents forming the set of documents; and

displaying cross-references in each group of documents in a tree structure in which the document attribute information or abbreviated information for each document forming part of the group of documents is displayed at a corresponding node by referring to the document group information and the document attribute information.

19. (THREE TIMES AMENDED) A relevant document display apparatus for displaying on a display device a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network, the cross-referenced message documents having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said apparatus comprising:

a contents estimation device to estimate topic patterns of the cross-referenced message documents stored in a document database based on contents of the documents, information pertaining to the documents, and cross-references among the documents, and to generate plural types of display indexes corresponding to the topic patterns, the topic pattern indicating a manner in which message details shift from one message to another;

an input device to input a retrieval request for the document database from a user;

a retrieval engine device to retrieve a document in the document database and to produce a retrieval result; and

a view generation device to generate plural types of views for displaying the retrieval result from said retrieval engine device using the display indexes, to switch the views, and to display the views on the display device.

20. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays a reference tree structure of displayed documents and information relating to a node corresponding to each document by grouping documents having an identical attribute in displayed documents, so that a user can easily understand an entire structure of references among displayed documents.

21. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays a reference tree structure of displayed documents and information relating to a node corresponding to each document by selecting only a document containing a large number of references in the displayed documents based on a size of a screen, so that a user can easily understand an entire structure of references among displayed documents.

22. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays a reference tree structure of displayed documents and information relating to a node corresponding to each document by selecting only a document containing a large number of references to documents containing a user input keyword, so that a user can easily understand an entire structure of references among displayed documents.

23. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays references among displayed documents with a topic pattern estimated about the documents by said contents estimation device, so that a user can easily understand an entire structure of references among displayed documents.

24. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays, in a calendar format, only documents in a specified time period in displayed documents, so that a user can easily understand a retrieval result from a document database related to time information.

25. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays, at a high intensity level, a specified topic pattern estimated by said contents estimation device, so that a user can easily understand an important portion of documents in a document database.

26. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device instructs said retrieval engine device to retrieve only a document corresponding to a question and an answer in a specified topic pattern estimated by said contents estimation device, so that a user can easily understand a combination of a question and an answer corresponding to a question item.

27. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays a specified author at a high intensity level based on a history of input opinions for each document in the document database and a specified topic pattern estimated by said contents estimation device, so that a user can easily understand an important portion of documents in a document database.

28. (AS ONCE AMENDED) The apparatus according to claim 19, wherein said view generation device displays as a directed graph an author of each document in the document database as a node, the reference among the documents as a link, and a time of reference as intensity of the link, so that a user can easily understand references among documents in a document database from an author's viewpoint.

29. (AS UNAMENDED) The apparatus according to claim 19, wherein
a document stored in the document database is a message document of network news downloaded through a network.

30. (AS TWICE AMENDED) A method of displaying a relevant document for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network, the cross-referenced message documents having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said method comprising:
estimating topic patterns of the cross-referenced message documents stored in a document database based on contents of the documents, information pertaining to the

documents, and cross-references among the documents;
generating plural types of display indexes corresponding to the topic patterns;
inputting a retrieval request corresponding to the document database from a user;
retrieving a document in the document database to produce a retrieval result;
generating plural types of views for displaying the retrieval result using the display indexes;
switching the views ; and
displaying the views on a display device.

31. (AS TWICE AMENDED) A computer-readable storage medium storing instructions to direct a computer to perform a method for displaying a group of documents containing cross-referenced message documents contributed to at least one of a forum and a message board established through a computer network, the cross-referenced message documents having a cross-referenced relationship in which a document contributed earlier is referenced by documents contributed afterwards, said method comprising:

estimating topic patterns of the cross-referenced message documents stored in a document database based on contents of the documents, information pertaining to the documents, and cross-references among the documents;
generating plural types of display indexes corresponding to the topic patterns;
inputting a retrieval request corresponding to the document database from a user;
retrieving a document in the document database to produce a retrieval result;
generating plural types of views for displaying the retrieval result using the display indexes;
switching the views ; and
displaying the views on a display device.